We claim:

1. A glass ionomer cement comprising:
   a) polymer having a plurality of acidic repeating units but being substantially free of polymerizable vinyl groups;
   b) polymer having a plurality of acidic repeating units and a plurality of polymerizable vinyl groups;
   c) fluoroaluminosilicate glass;
   d) redox cure system that can initiate dark cure of the vinyl groups; and
   e) water.

2. A cement according to claim 1, wherein the fluoroaluminosilicate glass has been subjected to a surface treatment comprising acid, phosphate, chelating agent, silane or silanol.

3. A cement according to claim 2, wherein the glass has a neutral or near-neutral pH.

4. A cement according to claim 1, wherein at least one of the redox cure system components is encapsulated.

5. A cement according to claim 1, in the form of a multi-part product comprising fluoroaluminosilicate glass and the polymer that is substantially free of polymerizable vinyl groups in a first anhydrous part, and water in a second part.

6. A cement according to claim 1, in the form of a multi-part product comprising fluoroaluminosilicate glass and the polymer having a plurality of polymerizable vinyl groups in a first anhydrous part, and water in a second part.

7. A cement according to claim 1, in the form of a paste/liquid product that comprises fluoroaluminosilicate glass in the paste and water in the liquid.

8. A cement according to claim 1, in the form of a paste/paste product that comprises fluoroaluminosilicate glass in a first paste and a non-acid-reactive filler in a second paste.

9. A cement according to claim 1, comprising by weight about 0.5 to about 30 percent of the polymer that is substantially free of polymerizable vinyl groups, about 1 to about 30 percent of the polymer that has a plurality of polymerizable vinyl groups, less than about 90 percent of the fluoroaluminosilicate glass, about 0.01 to about 10 percent of the combined weight of the redox cure system and about 0.5 to about 40 percent of the combined weight of water and any added solvents, diluents or α,β-unsaturated monomers.

10. A cement according to claim 1, comprising by weight about 0.5 to about 20 percent of the polymer that is substantially free of polymerizable vinyl groups, about 1 to about 25 percent of the polymer that has a plurality of polymerizable vinyl groups, about 25 to about 85 percent of the fluoroaluminosilicate glass, about 0.2 to about 5 percent of the combined weight of the redox cure system and about 1 to about 30 percent of the combined weight of water and any added solvents, diluents or α,β-unsaturated monomers.

11. A cement according to claim 1, comprising by weight about 1 to about 10 percent of the polymer that is substantially free of polymerizable vinyl groups, about 5 to about 20 percent of the polymer that has a plurality of polymerizable vinyl groups, about 45 to about 75 percent of the fluoroaluminosilicate glass, about 0.5 to about 5 percent of the combined weight of the redox cure system and about 5 to about 20 percent of the combined weight of water and any added solvents, diluents or α,β-unsaturated monomers.

12. A cement according to claim 1, further comprising a photoinitiator.

13. A glass ionomer cement kit comprising two or more containers whose contents collectively comprise:

a) polymer having a plurality of acidic repeating units but being substantially free of polymerizable vinyl groups;

b) polymer having a plurality of acidic repeating units and a plurality of polymerizable vinyl groups;

c) fluoroaluminosilicate glass;

d) redox cure system that can initiate dark cure of the vinyl groups; and

e) water;

together with instructions for use of the cement kit.

14. A kit according to claim 13, further comprising one or more auxiliary devices that help a user to prepare and use the cement.

15. A kit according to claim 13, comprising an anhydrous mixture of fluoroaluminosilicate glass and the polymer that is substantially free of polymerizable vinyl groups in a first container, and water in a second container.

16. A kit according to claim 13, comprising an anhydrous mixture of fluoroaluminosilicate glass and the polymer having a plurality of polymerizable vinyl groups in a first container, and water in a second container.

17. A kit according to claim 13, comprising a paste containing fluoroaluminosilicate glass in a first container and a liquid containing water in a second container.

18. A kit according to claim 13, comprising a paste containing fluoroaluminosilicate glass in a first container and a paste containing non-acid-reactive filler in a second container.

19. A kit according to claim 13, comprising by weight about 0.5 to about 30 percent of the polymer that is substantially free of polymerizable vinyl groups, about 1 to about 30 percent of the polymer that has a plurality of polymerizable vinyl groups, less than about 90 percent of the fluoroaluminosilicate glass, about 0.01 to about 10 percent of the combined weight of the redox cure system and about 0.5 to about 40 percent of the combined weight of water and any added solvents, diluents or α,β-unsaturated monomers.

20. A method for making a glass ionomer cement comprising mixing cement components comprising:

a) polymer having a plurality of acidic repeating units but being substantially free of polymerizable vinyl groups;

b) polymer having a plurality of acidic repeating units and a plurality of polymerizable vinyl groups;

c) fluoroaluminosilicate glass;

d) redox cure system that can initiate dark cure of the vinyl groups; and

e) water;

and allowing the resulting mixture to cure.

21. A method according to claim 20, wherein the surface of the fluoroaluminosilicate glass is treated with acid, phosphate, chelating agent, silane or silanol prior to mixing.

22. A method according to claim 20, wherein the fluoroaluminosilicate glass is treated with a solution of a treatment agent and the pH of the solution or the treated glass is adjusted to neutral or near-neutral, thereby increasing storage stability of the cement components.

23. A method according to claim 20, wherein at least one component of the redox cure system is encapsulated prior to mixing.

24. A method according to claim 20, wherein the cement components are provided as a multi-part product comprising fluoroaluminosilicate glass and the polymer that is substantially free of polymerizable vinyl groups in a first anhydrous part, and water in a second part.

25. A method according to claim 20, wherein the cement components are provided as a multi-part product comprising fluoroaluminosilicate glass and the polymer having a plurality of polymerizable vinyl groups in a first anhydrous part, and water in a second part.

26. A method according to claim 20, wherein the cement components are provided as a multi-part product at least one part of which is lyophilized or otherwise dried.

27. A method according to claim 20, wherein the cement components are provided as a paste/liquid product that comprises fluoroaluminosilicate glass in the paste and water in the liquid.

28. A method according to claim 20, wherein the cement components are provided as a paste/paste product that comprises fluoroaluminosilicate glass in a first paste and a non-acid-reactive filler in a second paste.

29. A method according to claim 20, wherein the cement components are provided as a preformed article.

30. A method according to claim 20, wherein the cement components comprise by weight about 0.5 to about 30 percent of the polymer that is substantially free of polymerizable vinyl groups, about 1 to about 30 percent of the polymer that has a plurality of polymerizable vinyl groups, less than about 90 percent of the fluoroaluminosilicate glass, about 0.01 to about 10 percent of the combined weight of the redox cure system and about 0.5 to about 40 percent of the combined weight of water and any added solvents, diluents or α,β-unsaturated monomers.

31. A method according to claim 20, wherein the cement components comprise by weight about 0.5 to about 20 percent of the polymer that is substantially free of polymerizable vinyl groups, about 1 to about 25 percent of the polymer that has a plurality of polymerizable vinyl groups, about 25 to about 85 percent of the fluoroaluminosilicate glass, about 0.2 to about 5 percent of the combined weight of the redox cure system and about 1 to about 30 percent of the combined weight of water and any added solvents, diluents or α,β-unsaturated monomers.

32. A method according to claim 20, wherein the cement components comprise by weight about 1 to about 10 percent of the polymer that is substantially free of polymerizable vinyl groups, about 5 to about 20 percent of the polymer that has a plurality of polymerizable vinyl groups, about 45 to about 75 percent of the fluoroaluminosilicate glass, about 0.5 to about 5 percent of the combined weight of the redox cure system and about 5 to about 20 percent of the combined weight of water and any added solvents, diluents or α,β-unsaturated monomers.

33. A method according to claim 20, where the cure takes place in the dark.

34. A method according to claim 20, wherein the cement components further comprise a photoinitiator.

35. A method for treating tooth tissue, comprising:

a) mixing a:

i. polymer having a plurality of acidic repeating units but being substantially free of polymerizable vinyl groups;

ii. polymer having a plurality of acidic repeating units and a plurality of polymerizable vinyl groups;

iii. fluoroaluminosilicate glass;

iv. redox cure system that can initiate dark cure of the vinyl groups; and

v. water;

b) placing the resulting mixture in contact with the tooth tissue; and

c) allowing the mixture to cure.

36. A method according to claim 35, wherein the resulting mixture comprises by weight about 0.5 to about 30 percent of the polymer that is substantially free of polymerizable vinyl groups, about 1 to about 30 percent of the polymer that has a plurality of polymerizable vinyl groups, less than about 90 percent of the fluoroaluminosilicate glass, about 0.01 to about 10 percent of the combined weight of the redox cure system and about 0.5 to about 40 percent of the combined weight of water and any added solvents, diluents or α,β-unsaturated monomers.

37. A method according to claim 35, wherein the cure takes place in the dark.

38. A method according to claim 35, wherein the resulting mixture is placed using an atraumatic or a minimal intervention restorative technique.

39. A method according to claim 35, wherein the resulting mixture is placed without using a tooth pretreatment.

40. A method according to claim 35, wherein the resulting mixture is used to attach an orthodontic device to the tooth tissue.